
SFE efforts in FY02 and status of technical basis

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Status

- **Re-run of selective MIS samples Complete**
 - As Received
 - 24 hour reabsorption
 - 7 day reabsorption
- **Report in final stages**
 - SFE, IGA and selective TGA results
 - Sample protocols used
 - Need to compare SFE with TGA for 6 samples

Sample Categories

- **Same as Gillispie report**
 - **Pure PuO₂**
 - **Pu/U mixed**
 - **Mg and Ca**
 - **Na and K**
 - **Others Impurities**
- **60+ samples run**

Definitions

- **False Positive: IGA > SFE and exceeded 0.5%**
- **TGA results are reported as LOI up to 500°C and small sample size (mgs)**
- **25 Relative Percent Difference (RPD) between SFE and IGA is consider acceptable**

Preliminary Results

- **Pure PuO₂**
 - **No False Positives**
 - **11 samples run**
 - **8 SFE/IGA <25 RPD**
 - **2 IGA > SFE {MISNE2 (0.08, 0.03 @62.5%) and B1579 (0.17, 0.09@47.1%) }**
 - **BLO39 SFE <0.1% , IGA 0.41-0.44, TGA 0.51-0.57**
 - **Review of TGA results needed for final determination**

Preliminary Results

- **Pu/U mixtures**
 - **No False Positives**
 - **10 samples have been run**
 - **6 SFE/IGA <25 RPD**
 - **2 IGA > SFE at 24 hours, same samples are part of 6 above at 7 days**
 - **SPC-711 (non calcined) IGA X2 SFE (0.4 / 0.2)**
 - **SFE and IGA agreed following calcination (<0.03%)**
 - **TGA results under review**

Preliminary Results

- **Mg and Ca**
 - **1 false positive (7 day, J2201, 0.35% and 0.50%)**
 - **Suggestion in lower moisture control value to 0.25% to address this concern**
 - **26 samples run**
 - **14 SFE/IGA <25RPD**
 - **13 SFE/IGA >25RPD**
 - **5 moisture was >1% and observation reported heterogeneity**
 - **2 were part of multiple analysis and average of the 3 run meet criteria**
 - **4 samples form Hanford (R437 and 440) initial results showed agreement with SFE/IGA and TGA. Later results > criteria. Reviewing TGA results for better understanding.**

Preliminary Results

- **Na and Ca**
 - **No False Positives**
 - **7 samples run**
 - **4 SFE/IGA <25RPD**
 - **3 SFE/IGA >25RPD (all SFE higher)**
 - **One would be considered False Positive for IGA (24 hour)**
 - **Run log reported plugging of restrictor**
 - **Restrictor replaced (7 day run of same sample passed)**

Preliminary Results

- **Other Impurities**
 - **No False Positives**
 - **9 samples run**
 - **5 SFE/IGA <25RPD**
 - **4 SFE/IGA >25RPD**
 - **2 results of both <0.1%**
 - **2 SFE > IGA**
 - » **1 IGA false positive (0.65% and 0.44%)**
 - » **Both samples run log (inhomogeneous)**

Current Status

- **TGA input to finalize report for review process**
- **Instrument has not been used for 6-9 months and downtime has cause operational issues, currently undergoing repair.**
- **New SFE instrument should be installed in PF-4 sometime in this FY**